CLAIMS:

1. A material capable of luminescence comprising:

a polymer or oligomer; and

an organometallic group

characterised in that the polymer or oligomer is at least partially conjugated and the organometallic group is covalently bound to the polymer or oligomer and the nature, location and/or proportion of the polymer or oligomer and of the organometallic group in the material are selected so that the luminescence predominantly is phosphorescence.

2. A material according to claim 1, wherein the polymer or oligomer is linear.

3. A material according to claim 1 or claim 2, comprising more than one organometallic group.

4. A material according to any one of the preceding claims, wherein triplet energy level of the organometallic group is lower than the corresponding singlet and triplet energy levels of the polymer or oligomer.

5. A material according to any one of the preceding claims, wherein the luminescence is electroluminescence.

6. A material according to any one of the preceding claims, wherein the organometallic is conjugatively bound to the polymer or oligomer.

7. A material according to any one of the preceding claims, wherein the polymer or oligomer is semiconducting.

8. A material according to claim 7, wherein the polymer or oligomer is capable predominately of fluorescence in the absence of the organometallic.

9. A material according to claim 8, wherein the polymer or oligomer comprises an aryl or heteroaryl repeat unit.

10. A material according to claim 9, wherein the aryl or heteroaryl repeat unit comprises a group selected from the group consisting of 2,7-linked 9,9 disubstituted fluorene, a p-linked dialkyl phenylene, a p-linked disubstituted phenylene, a phenylene vinylene, a 2,5-linked benzothiadiazole, a 2,5-linked substituted benzothiadiazole, a 2,5-linked disubstituted benzothiadiazole, a 2,5-linked substituted or unsubstituted thiophene or a triarylamine.

11. A material according to any one of the preceding claims, wherein the organometallic contains a transition metal.

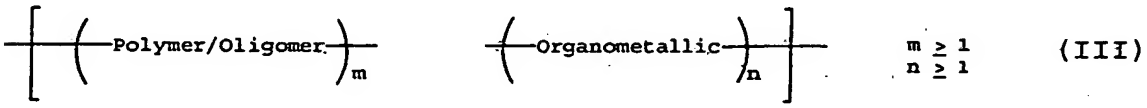
12. A material according to claim 11, wherein the organometallic contains a precious metal.

13. A material according to any one of the preceding claims, wherein material comprises organometallic in an amount in the range from 1 to 10 % by weight.

14. A material according to any one of the preceding claims, wherein the organometallic is pendent from the backbone of the polymer or oligomer.

15. A material according to any one of claims 1 to 13, wherein the organometallic forms a part of the backbone of the polymer or oligomer.

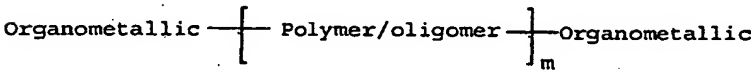
16. A material according to claim 15, having general formula III:



(III)

17. A material according to claim 15, wherein the organometallic is located at the end of the polymer or oligomer backbone.

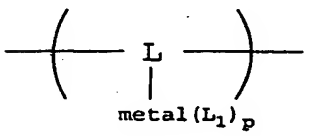
18. A material according to claim 17, having general formula II:



(II)

where m 1

19. A material according to any one of claims 15 to 18, wherein the organometallic group has the structure:



where L is a ligand and each L_1 is a further ligand which may be the same or different from one another and p is a number suitable to satisfy the valency of the metal.

20. A material according to any one of claims 15 to 17, wherein the organometallic contains an aryl or heteroaryl group.

21. A material according to claim 20, wherein the aryl or heteroaryl group comprises a group selected from the group consisting of 2,7-linked 9,9 disubstituted fluorene, a p-linked dialkyl phenylene, a p-linked disubstituted phenylene, a phenylene vinylene, a 2,5-linked benzothiadiazole, a 2,5-linked substituted benzothiadiazole, a 2,5-linked disubstituted benzothiadiazole, a 2,5-linked substituted or unsubstituted thiophene or a triarylamine.

22. Use of a material according to any one of the preceding claims as a component in an optical device.

23. Use of a material according to claim 22, wherein the optical device comprises an electroluminescent device.

24. An optical device or a component therefor, which comprises a substrate and a material as defined in any one of claims 1 to 21 supported on the substrate.

25. An optical device or a component therefor according to claim 24, wherein the optical device comprises an electroluminescent device.

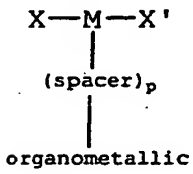
26. An optical device according to claim 25, wherein the electroluminescent device comprises:

a first charge carrier injecting layer for injecting positive charge carriers;

a second charge carrier injecting layer for injecting negative charge carriers;

a light-emissive layer located between the charge carrier injecting layers for generating light and comprising a material as defined in any one of claims 1 to 21.

27. A monomer for use in a polymerisation reaction having a general formula as shown in IV or V below:

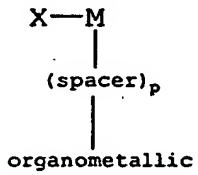


(IV)

X——— organometallic ———X' (V)

where the organometallic in formula V includes a carbon-metal bond; X and X' each is a reactive groups independently selected from the group consisting of a halide group, a boronic acid group, a boronic ester group and a borane group; $p \geq o$; M is a group comprising an aryl or heteroaryl group and L is a ligand capable of forming a complex with a metal when treated with a metal-complexing reagent, preferably the organometallic does not comprise Ru.

28. An end-capping reagent for use in a polymerisation reaction having a general formula as shown in formula X or XI:



(X)

X——organometallic (XI)

where L is a ligand capable of forming a complex with a metal when treated with a metal-complexing reagent; X is a reactive group selected from the group consisting of a halide group, a boronic acid group, a boronic ester group and a borane group; and where X is a reactive halide group in formula XI then X is bound to a ligand of the organometallic.

29. A process for preparing a material as defined in claim 17 or claim 18, which comprises:

(a) reacting monomers to form a polymer or oligomer wherein each monomer has at least two reactive groups selected from the group consisting of a halide group, a boronic acid group, a boronic ester group and a borane group and each monomer comprises an aryl or heteroaryl group; and

(b) terminating the polymer or oligomer formed in step (a) using an end-capping reagent, said end-capping reagent comprising one reactive group selected from the group consisting of a halide group, a boronic acid group, a boronic ester group and a borane group and either (i) containing an organometallic as defined in claim 1 or claim 9 or (ii) being capable of forming a

complex with a metal when treated with a metal-complexing reagent; and

(c) where the end-capping reagent is as defined in (ii), treating the terminated polymer or oligomer from step (b) with a metal-complexing reagent.

30. A process for preparing a material as defined in any one of claims 1 to 16, which includes reacting at least one first monomer with a plurality of second monomers which are different to the first monomer to form a polymer or oligomer;

wherein each monomer comprises an aryl or heteroaryl group and has at least two reactive groups selected from the group consisting of a halide group, a boronic acid group, a boronic ester group and a borane group; and wherein the first monomer either (i) contains an organometallic or (ii) is capable of forming a complex with a metal when treated with a metal- complexing reagent; and

(c) where the first monomer is as defined in (ii), treating the polymer or oligomer from step (b) with a metal-complexing reagent.